

Abstract

The present invention provides a preparation of undifferentiated embryonic stem (ES) cells sustainable for a prolonged period in an undifferentiated state which will undergo stem cell renewal or somatic differentiation. Preferably the cells are capable of somatic differentiation *in vitro* and are inclined to differentiate away from an extraembryonic lineage. The present invention also provides method of culturing embryonic stem (ES) cells to improve stem cell maintenance and persistence in culture. The method also provides a culture of ES cells prepared by the method as well as differentiated cells derived from the embryonic cells resulting from directed differentiation procedures provided by the present invention.